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ABSTRACT

A project that was designed to teach medical students how to use the medical history in collecting information relevant to the psychosocial and disease risk status of the patient was studied. A pilot curriculum designed to focus on the importance of preventive medicine and psychosocial aspects of the medical history was evaluated. Comparisons of student writeups for two successive medical school classes were conducted using a 71-item checklist; one class received the former curriculum, the other class experienced the pilot curriculum. Chi square procedures compared student performance for these two classes in relation to documentation and translation errors. Analysis of variance was used to determine the significance of differences in the mean number of documentation and translation errors between the two classes. Results of the analyses indicated statistical differences favoring the new curriculum. The students in the pilot curriculum made fewer documentation and translation errors on their writeups than did the students who received the former curriculum. Hence, the students in the new curriculum were found to be more facile in documenting patient psychosocial data and risk factors for illness.(SW)

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AN ASSESSMENT OF A PSYCHOSOCIAL/RISK FACTOR INTERVENTION CURRICULUM MODEL

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ABSTRACT

Although the patient history is recognized as one of the most important tools available to the physician, it frequently receives insufficient emphasis in undergraduate medical curricula. Likewise, despite increasing understanding of the epidemiology of disease causation and significant psychosocial, genetic, and historical risk factors, medical students are not instructed to utilize the medical history to identify patients with these problems.

The purpose of this study was to evaluate a pilot curriculum designed to focus on the importance of preventive medicine and psychosocial aspects of the medical history. The curriculum reinforced two basic skills: 1) the proper documentation of information in the written text of the patient history and 2) the correct translation of documented patient problems in the text to the problem list.

Comparisons of student writeups for two successive medical school classes were conducted using a seventy one criterion item checklist; one class received the former curriculum, whereas the other class experienced the pilot curriculum. Chi square procedures compared student performance for these two classes in relation to documentation and translation errors. Analysis of variance was used to determine the significance of differences in the mean number of documentation and translation errors between the two classes. Results of the analyses indicated statistical differences favoring the new curriculum. The students in this pilot curriculum made fewer documentation and translation errors on their writeups than did the students who received the former curriculum. Hence, the students in the new curriculum were found to be more facile in documenting patient psychosocial data and risk factors for illness.

This project represents a successful effort in teaching medical students how to use the medical history in collecting information relevant to the psychosocial and disease risk status of the patient. The project has also generated a methodology for influencing future physician behavior in these otherwise neglected areas.

Key words: Patient history, psychosocial history, risk factor identification, preventive medicine, medical curriculum change.

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Introduction The patient history is recognized as one of the most important tools available to the physician in the realm of disease diagnosis and therapy. The physical examination, subsequent laboratory evaluation, and treatment strategies are usually directed by the information obtained during the history taking process.[1] However, the use of the patient history to formulate and test hypotheses frequently receives less emphasis in medical education than does a technologically oriented approach to human illness.[2] Likewise, despite increasing understanding of the epidemiology of disease causation and specific genetic, lifestyle and historical risk factors[3], medical students are not adequately instructed as to how the medical history can be utilized to identify such patient problems.[4]

A growing literature on the merits of a biopsychosocial model of medicine,[5] as contrasted with the prevailing biomedical model, highlights the importance of environmental, social and behavioral factors in controlling chronic disease morbidity and preventing disease.[6,7] These developing fields of knowledge are the crux of preventive health care, however, their integration into the medical curriculum has been deficient.[8,9] As Nardone et al.[10] point out, medical schools have been slow to incorporate these concepts in undergraduate teaching programs. Limited understanding of risk factor identification as well as the biopsychosocial model, contribute to the lack of faculty support for this aspect of the teaching process. Increasing enrollments and demands on faculty time have also contributed to the low professional status of preventive medicine in medical school hierarchies.[10,11] Consequently, medical student facility with preventive medicine strategies and problem solving skills in the clinical setting are highly variable.

Jonas[6] states that since physicians provide the primary direction to the health care system, the system's character will be reflective of their orientation. If they are disease/treatment oriented, the system will be the same; if they are prevention oriented, the system will likewise assume this as a priority. Schweiker[12] in his speech at the 1981 plenary session

of the Association of American Colleges, points out that a sound prevention strategy must have its roots in medical education:

> If we are to plan a strong prevention ethic in our country's health care system, then training physicians and other health professionals is obviously the place to start. As medical educators, you can provide the leadership that we need to make it come about.

In 1981, The University of Michigan Medical School initiated a pilot curriculum project focusing on the importance of the medical history in clinical problem solving and its role in preventive medicine as an integral part in undergraduate clinical training. Objectives included: 1) demonstrating to students the use of the patient history for hypothesis generation and testing, 2) increasing student understanding of risk factors and the impact of psychosocial factors on disease, 3) reinforcing documentation of pertinent information in the written text of the patient history, 4) encouraging problem solving through the translation of documented patient problems to the problem list.

This study was undertaken to design a cost effective standardized method of assessing the instructional effectiveness of the changes associated with the curriculum project. Specifically, the evaluation was to determine if the students who received the revised prevention oriented curriculum performed differently in relation to the four objectives specified for the project than did the students from the prior year who had experienced a different curriculum orientation. The means of evaluation were designed with consideration given to the following parameters: 1) insufficient faculty time for intensive observation and evaluation of student skills, 2) lack of standardization among faculty assessments of clinical skills,[7,10] and 3) prior deficiencies in providing adequate feedback to students.

Method

Curriculum Intervention Prior to the initiation of the pilot project in 1981, the former undergraduate clinical skills curriculum had placed major emphasis on documentation of the medical history and problem identification as it related to disease processes. In addition, interviewing techniques and communication skills were included in the instruction. In contrast, the new curriculum focused the student's attention on hypothesis generation and testing, risk factor identification, and the recognition of important psychological, social, and environmental parameters which should be identified for each patient. A comprehensive core content syllabus was developed to: 1) define the content and purpose of each portion of a patient history database, and 2) explain the significance of the data obtained during a patient history.

Evaluation Project Given the design constraints outlined in the introduction, it was determined that the most meaningful and relevant outcome behaviors would be the student's abilities to: 1) recognize and document clinical problems and associated risk factors on writeups of a patient history, and 2) initiate clinical problem solving as indicated by the listing of identified problems on an associated problem list. Interviewing and

physical examination skills were also taught in the new curriculum. However, these skills were not examined for the purposes of this evaluation.

A seventy one criterion item checklist for evaluating student writeups was developed after an extensive review of the medical literature was conducted by the authors. The object of this review was to document the rationale behind each criterion item. Two types of behaviors were subsequently operationalized for assessment: 1) Documentation - correct or incorrect recording of the criterion items, and 2) Translation - correct or incorrect translation of identified risk factors and clinical problems to the problem list. Of the seventy one patient history criterion items identified for evaluating the different sections of student writeups, there were forty five possible documentation errors and twenty four possible translation errors. Feedback responses addressing the nature of the error as well as providing constructive guidance were generated for each of the possible errors. A wordprocessing procedure was subsequently developed to generate these responses upon input of the incorrect checklist item number; the goal was to quickly provide standardized feedback to the students regarding their medical history writeups.

Before beginning the preliminary evaluation study, the checklist forms and coding procedures were tested. A sample of ten student writeups was selected. Each of these writeups was scored by the five authors and a nurse. Two of the authors had no formal health science training. Cohen's Kappa was used to estimate the level of agreement among the six persons scoring the student writeups. Data from this trial (Table 1) indicated a high level of agreement among the raters. This finding implied to the authors that: 1) the coding procedures were understood by all, 2) the criterion items on the checklist were internally valid, and 3) once trained, evaluators other than physicians could be utilized in future evaluations.

Table 1

INTERRATER AGREEMENT USING COHEN'S KAPPA

Rater No.	1	2	3	4	5
2	.63				
3	.65	.8			
4	.61	.75	.73		
5	.62	.77	.76	.71	
6	.62	.85	.79	.79	.82

Writeups from the medical school classes of 1983 and 1984 were used for the preliminary project analysis. The class of 1983 received the former curriculum, whereas the class of 1984 was the first to receive the pilot curriculum. Fifty six writeups for the class of 1983 were randomly selected from those completed at the end of the class' sophmore year. Similarly, sixty three were randomly selected from the end of year writeups for the class of 1984. These writeups were subsequently evaluated to identify the specific errors.

Comparisons of student performance in the two classes were conducted. Separate error score analyses were performed for ten checklist sections and for the total documentation and translation error scores. These ten sections included: 1) Chief Complaint, 2) Past Medical History (including Childhood Illnesses, Adult Illnesses, Accident History, Allergy History, and Immunization History), 3) Substance Abuse History, 4) Exposure History, 5) Health Habits History, 6) Dietary History, 7) Medication History, 8) Family History, 9) Social History, and 10) Review of Systems. The significance of differences in the frequency of student errors made on each checklist section was tested using the X^2 procedure or the median test variation of it. The median test was used for those sections where expected cell frequencies did not meet the statistical assumptions for Chi square analysis. The significance of differences in the mean number of total errors was tested using the analysis of variance (ANOVA) technique.

Results Table 2 displays the results of the statistical analyses comparing the number of patient history writeup errors in the two classes. Results of the analyses of variance regarding the total number of errors made by the two classes on the writeups indicated statistical differences ($p < .01$) favoring the new curriculum. These students made significantly fewer documentation and translation errors on their patient history writeups than did the students who received the old curriculum.

The Chi square and median test analyses conducted for the individual sections of the writeup revealed that the students in the new curriculum class also tended to make fewer documentation errors ($p < .01$) than the students who received the former curriculum on all sections of the writeup except for the Chief Complaint and Review of Systems sections. However, the new curriculum students only made significantly fewer translation errors on the Past Medical History section ($p < .01$).

Discussion and Summary The results of this preliminary project assessment have been encouraging to the program coordinators involved with the curriculum changes. The students in the revised curriculum appear to be significantly more facile in identifying and documenting patient data, predisposing risk factors, and psychosocial information. Their ability to generate hypotheses regarding the identified risk factors for future intervention or treatment also appears to be more advanced as compared to those students who received the old curriculum. However, this latter finding appears to be predominantly due to the revised curriculum student's translational expertise with the Past Medical History data only. The lack of significant differences between the two groups in relation to the other three areas for which translational errors were possible - Substance Abuse History, Exposure History and Family History - indicates that either the new curriculum has been deficient in facilitating student problem solving in these areas or that the impact of the risk factors related to these patient data is self-evident to the second year medical student.

The affective impact of the curricular changes as well as the longevity of the effects has yet to be assessed. The major goals for this preliminary assessment included testing the usefulness and efficiency of the writeup checklist in addition to identifying any initial effects that the new

curriculum may have produced. The checklist and the wordprocessor feedback system also have to be further analyzed and refined before formal evaluation of their contributions can be conducted. However, the preliminary findings of this study indicate that the use of the checklist by adequately trained non-physicians can provide the specific, consistent, and continued feedback that frequently is lacking in faculty evaluation of student writeups. Likewise, large numbers of student writeups can be efficiently evaluated by a standardized methodology that requires minimal faculty involvement.

The major value of this study is that it has resulted in the design of an evaluation methodology that appears to be promising for future implementation and research. Furthermore, a review of the literature reveals that this project represents one of the few descriptions of innovative curriculum projects in undergraduate medical education which has focused on incorporating clinical problem solving, preventive medicine concepts, and the biopsychosocial model of illness to influence the behaviors of future physicians.

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Table 2

Student Errors by Checklist Section

Section	Number of Items	Documentation Errors[1] Possible Errors	Documentation Errors[1] Mean (sd) 1983	Documentation Errors[1] Mean (sd) 1984	Translation Errors[2] Possible Errors	Translation Errors[2] Mean (sd) 1983	Translation Errors[2] Mean (sd) 1984
1. Chief Complaint	2	2	0.6 (0.5)	0.4 (0.5)			
2. Past Medical History	21	8*	2.8 (1.4)	1.2 (0.9)	14*	3.2 (1.5)	1.2 (1.2)
3. Substance Abuse History	5	3*	0.7 (0.7)	0.5 (0.5)	2	0.5 (0.6)	0.4 (0.6)
4. Exposure History	6	1*	1.0 (0.1)	0.2 (0.4)	5	0.0 (0.2)	0.2 (0.4)
5. Health Habits History	2	2*	1.3 (0.5)	0.3 (0.5)	-		
6. Dietary History	2	2*	1.6 (0.6)	0.6 (0.5)	-		
7. Medication History	2	2*	0.9 (0.6)	0.5 (0.5)	-		
8. Family History	12	6	3.0 (1.0)	1.4 (1.4)	3 -	0.5 (0.9)	0.3 (0.5)
9. Social History	9	9	4.4 (2.2)	2.3 (1.7)	-		
10. Review of systems	10	10	1.4 (1.7)	2.0 (2.3)	-		
Total	71	45*	17.7 (4.1)	9.3 (5.0)	24*	3.6 (1.7)	1.8 (1.4)

*$p < 0.01$

[1]Comparisons 1, 3-7 made using X^2; 2, 8-10 using median test; Total using ANOVA

[2]Comparisons 3 and 4 made using X^2; 2 and 8 median test; Total using ANOVA